

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY:

To:

see form PCT/ISA/220

## PCT

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/EP/2004/003617

International filing date (day/month/year)  
31.03.2004

Priority date (day/month/year)  
31.03.2003

International classification (IPC) or both national classification and IPC  
C25

Applicant  
CORRO

1. The International Searching Authority indicates indications relating to the following items:

- ☐ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

#### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITYInternational application No.  
PCT/EP2004/003625

JC20 Rec'd PCT/PTO 26 SEP 2009

## Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material:  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing:  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/EP2004/003625

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**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	5
	No: Claims	1-4,6-10
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

PCT/EP2004/003625

**Re Item V****Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Clarity, Article 6 PCT**

Claim 1 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter in terms of the result to be achieved, namely an improvement of electrical conductivity of the molten salt bath, which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.

Claim 6 is unclear because the measures defined in claim 1 by a result to be achieved are further characterized by unclear features. The feature "enhancing the effective area of an anode ... by reducing the amount and/or size of gas bubbles" is also defined by a result to be achieved without providing the technical features how to achieve a reduction of gas bubbles.

The applicant's attention is drawn to the fact that novelty and inventive step cannot be based on unclear features. Thus, for purposes of sections "Novelty" and "Inventive Step" below the unclear features have not been taken into consideration.

**2. Cited documents**

- D1: US-A-4 464 234 (MINH NGUYEN Q ET AL) 7 August 1984 (1984-08-07)  
D2: DE 34 12 114 A (BBC BROWN BOVERI & CIE) 10 October 1985 (1985-10-10)  
D3: GB 484 014 A (DANIEL GARDNER) 29 April 1938 (1938-04-29)

Reference is particularly made to those passages of the documents indicated in the search report.

**3. Novelty, Article 33 (2) PCT**

D1 discloses a process for the electrolysis of aluminium sulfide at a temperature of about 750 °C, the bath comprising aluminium chloride as an additive in order to increase current density, and further additives of sodium chloride or potassium chloride. Formation of chlorine gas at the anode is avoided.  
Claims 1,2,6,7,9 and 10 therefore lack novelty.

D2 suggests a process for the electrolysis of aluminium sulfide in molten polysulfide, the bath having additives in order to afford operation at about 700 °C so that conductivity of the bath is high.  
Thus, claims 1,2,6,8,9 and 10 are not new.

D3 is directed towards a process of electrolyzing aluminium sulfide in cryolite, comprising additional sodium fluoride and potassium fluoride.  
Claims 1-4, 6 and 8 are therefore not new.

**4. Inventivity, Article 33 (3) PCT**

Claim 5 is not inventive in view of D3 because a suitable concentration of cryolite can be determined by routine tests.

5 ( The combination of a bath of aluminium sulfid in molten chloride salt, comprising a fluoride as an additive in order to improve current density is not suggested by the prior art documents. It would therefore appear that an independent claim restricted to this combination of features is new and inventive.